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## Some recently described Ferns from the Southwest.<sup>1</sup>

WILLIAM R. MAXON.

Rather more than a year ago, in a short article entitled "New Southwestern Ferns,"<sup>2</sup> Professor Leslie N. Goodding published descriptions of four supposed new species and one new variety of ferns from Cochise County, Arizona, and of one species from the State of Sonora, Mexico, all of these being based upon specimens of his own collecting. Recently Professor Goodding has very courteously presented the type specimens of these to the United States National Museum, in order to render them more readily accessible to botanists generally, and has also forwarded specimens of other uncommon ferns from the same region. Notes upon these are presented herewith. Unfortunately all of those described as new by Professor Goodding actually pertain to species previously recognized, though one of them is new to the United States. Of the other species several are of more than ordinary interest from their comparative rarity.

*ASPLENium* *PARVULUM* *GRANDIDENTATUM* Goodding,  
*Muhlenbergia* 8: 92. 1912.

Founded upon specimens collected in *Asplenium* Canyon, Mule Mountains, Cochise County, Arizona, August, 1911, by Leslie N. Goodding (No. 976); United States National Herbarium, No. 692,683.

This is exactly *Asplenium Palmeri* Maxon, described in 1909,<sup>3</sup> a species new to the United States, having been known hitherto only from Mexico and northeastern Guatemala. It is unique among North American

<sup>1</sup>Published by permission of the Secretary of the Smithsonian Institution

<sup>2</sup>*Muhlenbergia* 8: 92-94. 1912.

<sup>3</sup>*Contr. U. S. Nat. Herb.* 13: 39. 1909.

species of the group of *A. Trichomanes* in having the fronds recurved and proliferous at the tip, many of them actually striking root and developing young plants. Although the Arizona specimens are typical, this feature is not very readily apparent to one unacquainted with this species, since most of the fronds (which are fragile) are broken off in their apical part, only one or two of them showing the characteristic proliferation. The position of the sori midway between the margin and midvein is also distinctive, those of *A. resiliens* (*A. parvulum*) being borne much nearer the margin. A synopsis of *Asplenium Trichomanes* and its American allies has recently been published by the writer.<sup>1</sup>

**ASPENIUM RUPIUM** Goodding, *Muhlenbergia* 8: 92. 1912.

Founded upon specimens collected in Asplenium Canyon, Mule Mountains, Cochise County, Arizona, by Leslie N. Goodding, in August, 1911 (No. 969), and April, 1909 (No. 67). The first of these, being the more perfect, may stand as the type; United States National Herbarium, No. 692,685.

The specimens just cited agree in every particular with the plant described as a new species from the same general region several years ago as *Asplenium Ferrissi* Clute.<sup>2</sup> This has since been reduced<sup>3</sup> to *Asplenium alternans* Hook., or (as it ought properly to be called) *Ceterach Dalhousiae* (Hook.) C. Chr., a species known otherwise only from Abyssinia and the Himalaya. Although this is a most unusual distribution, it must be confessed that the Arizona plants offer no tangible points of difference from those of the Old World. If

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<sup>1</sup>Contr. U. S. Nat. Herb. 17: 134-153. 1913.

<sup>2</sup>Fern Bull. 16: 1. plate. 1908.

<sup>3</sup>Fern Bull. 19: 33 et seq. 1911.

we accept *Ceterach* as the proper generic reference of this plant, a new genus is thus added to the North American flora.

CHEILANTHES SONORENSIS Goodding, *Muhlenbergia* 8: 93. 1912.

Founded upon specimens collected at La Cienaga, Sonora, Mexico, on brushy north slopes, July 18, 1911, by Leslie N. Goodding (No. 942); United States National Herbarium, No. 692,686.

This is precisely *Cheilanthes Pringlei* Davenp., described from specimens collected by Pringle in the Sierra Tucson, Arizona, May 2, 1883, and beautifully illustrated by Faxon. It is a peculiar plant and a rare one, though since collected in Arizona by Pringle, Parish, Hough, Blumer, and probably by others, and in Sonora and Chihuahua, Mexico, by Hartman, Lloyd, and the late Dr. Edward Palmer. *Cheilanthes peninsularis* Maxon is a closely allied species from Lower California.

NOTHOLAENA COCHISENSIS Goodding, *Muhlenbergia* 8: 93. 1912.

Founded upon specimens from rocky limestone ridges, Montezuma Canyon, Cochise County, Arizona, collected August 10, 1909, by Leslie N. Goodding (No. 373); U. S. National Herbarium, No. 692,688.

The excellent specimens to which this name was applied represent the well known narrow form of *Notholaena sinuata* (Kaulf.) Swartz known usually as the variety *integerrima* Hook. This is apparently a common state of the species and in the writer's judgment does not merit recognition as a distinct species, although several close observers who are familiar with it in the field have repeatedly expressed to the writer a contrary opinion. If recognized as a valid species

it should be known as *Notholaena laevis*, a most inappropriate name given by Martens and Galeotti to Mexican specimens in 1842.<sup>1</sup>

NOTHOLAENA HYPOLEUCA Goodding, *Muhlenbergia* 8: 94. 1912.

Founded upon specimens collected from the rocky slopes of Slavonian Canyon, Mule Mountains, Arizona, August, 1911, by Leslie N. Goodding (No. 1004); U. S. National Herbarium, No. 692,687.

In his description of *Notholaena hypoleuca* Professor Goodding remarks that it "is most closely related to *N. Grayi*, from which it differs in the very conspicuous scales on the under side of the frond and several other important features." However, a critical study of the very ample type specimens shows that while they differ somewhat from ordinary forms of *N. Grayi* in their narrower fronds and more strict and narrower pinnae, they are identical in minute structural characters of rhizome scales, in the sparingly ceraceous-pulverulent covering of the upper side of the pinnae, in their dense white-ceraceous covering beneath, and especially in the structure, position, abundance, and color of the scales upon the primary and secondary rachises and upon the midveins of the segments beneath. These characters are important and serve to place Professor Goodding's plant definitely under *Notholaena Grayi*; whereas the rather strict appearance of the pinnae and their individual shape are characters which might readily develop from unusual conditions of environment. The plants have, in fact, a decided look of having grown in an exposed situation.

*Notholaena Grayi* was originally described by Davenport<sup>2</sup> from specimens collected on "grassy slopes of

<sup>1</sup> Mém. Acad. Brux. 15<sup>3</sup>: 46. 1842.

<sup>2</sup> Bull. Torrey Club 7: 50. plate 4. 1880.

the foothills," in the mountains of southeastern Arizona, by William M. Courtis in 1880. It was illustrated by Faxon. Within the next three or four years it was collected by several botanists in different parts of Arizona; for example, in the Dragoon Mountains by G. R. Vasey, in the Huachuca Mountains by Lemmon, in the foothills of the Santa Rita Mountains by Pringle, in the Baboquiverei Mountains by Pringle, at Clifton by Rusby, and at Bowie by M. E. Jones. It is credited also to Texas and is known from two collections in northern Mexico by Dr. Edward Palmer. The Texas plants have not been seen by the writer. Of the others, which are all represented in the National Herbarium, the Arizona plants of Lemmon and G. R. Vasey are the best developed and are in close agreement with the original specimens, as delineated in Faxon's excellent illustration.

If Professor Gooding's species is eventually recognized as distinct from *N. Grayi* it can not be known as *Notholaena hypoleuca*, since this name was given long ago by Kunze<sup>1</sup> to a South American species which is regarded as valid.

**PELLAEA TRUNCATA** Goodding, *Muhlenbergia* 8: 94. 1912.

Founded upon specimens collected in rocky "draws" of the Mule Mountains, Cochise County, Arizona, August, 1911, by Leslie N. Goodding (No. 977); United States National Herbarium, Nos. 692,689 and 692,690.

Upon one of the type sheets is mounted a single, very large, leafy, nearly sterile specimen; upon the other a smaller fertile plant, with two detached fronds, these with small, strongly fertile segments. All are to be referred to the common and exceedingly variable species

<sup>1</sup> *Linnaea* 9: 54. 1834.

of the southwest usually known as *Pellaea Wrightiana* Hook., but which, as Christensen has shown, must be called *Pellaea mucronata* Eaton, the name *mucronata* having a priority of two years. Few fern species of the United States show a wider range of variation than this.

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Among the other interesting ferns of Professor Goodding's collection are the following:

**POLYPODIUM HESPERIUM** Maxon. The specimens are from Fort Grant, Arizona, under ledges, June 15, 1912, *Goodding* 1046. They agree well with the few Arizona specimens known and are evidently only a minor variant of this common species of the western United States. The Arizona plant described recently as a new species, *Polypodium prolongilobum*, by Mr. Clute,<sup>1</sup> appears to be a nearly sterile thin-leaved form of this species.

**POLYPODIUM THYSANOLEPIS** A. Br. This is represented by specimens from Ramsey Canyon, Huachuca Mountains, Arizona, collected August 23, 1910, *Goodding* 761. It seems to be known in the United States only from the Huachuca Mountains. The specimens are not very large but otherwise they are perfectly typical of the species as it exists from Mexico to the Andes of South America and in Jamaica. There are many related species in tropical America, whose limits are not clearly understood. These will be treated in a paper soon to be published by the writer.

**DRYOPTERIS DRYOPTERIS** (L.) Britton. Excellent specimens of this species were collected in dense shade upon steep slopes, Bonita Creek, in the White Mountains of central-eastern Arizona, July 23, 1912, *Goodding* 1222. These constitute a notable extension of range, the species having been known heretofore to extend no farther south than Colorado. This species, commonly

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<sup>1</sup>Fern Bull. 18: 97. 1910.

known as *Phegopteris Dryopteris*, is a true member of the enormous genus *Dryopteris*. Christensen, recognizing this fact and desiring to avoid employing the double name *Dryopteris Dryopteris*, renamed it *Dryopteris Linneana* in 1905;<sup>1</sup> but in so doing he apparently overlooked the fact that it had been named *Polypodium disjunctum* by Ruprecht, in 1845,<sup>2</sup> and that this name could properly be transferred to *Dryopteris*. Under the so-called American code of nomenclature, however, there is no requirement necessitating the exclusion of "double" names. Thus, the recently published name *Dryopteris Dryopteris*<sup>3</sup> is technically correct.

**NOTHOLAENA ASCHENBORNIANA** Klotzsch. The specimens are from the exposed, rocky southern slopes of the Mule Mountains, Arizona, January 1, 1913, Goodding 1387. They are exactly typical of the species as described from Mexican specimens by Klotzsch in 1847, and again from other Mexican specimens by Liebmann under a second name (*Notholaena bipinnata*) in 1849. In the United States the species is known only from Texas and Arizona. It is apparently less rare in Mexico; but a part of the Mexican material so referred represents a wholly distinct but closely related species which is as yet undescribed.

**CHEILANTHES MARGINATA** H.B.K. There are two collections, both from the moist slopes of Ramsey Canyon, Huachuca Mountains, Arizona, Goodding 760 and 1327. This species, which is often known as *Pellaea marginata*, extends in one form or another from Arizona to Argentina. In the United States it has been found solely in the Huachuca Mountains. Taken in a very broad sense it may indeed be regarded as a genuinely

<sup>1</sup>C. Chr. Index Fil. 275. 1905.

<sup>2</sup>Ruprecht, Beitr. Pflanzenk. Russ. Reich. 3: 52. 1845.

<sup>3</sup>Ill. Fl. ed. 2. 1: 23. 1913.



polymorphic species; but, on the other hand, it is more than likely that several of its reputed synonyms will be found upon careful investigation to represent forms which are specifically distinct. Such a study is urgently needed.

PELLAEA TERNIFOLIA (Cav.) Link. Collected from dry rocks, Ramsey Canyon, Huachuca Mountains, Arizona, August 23, 1910, *Goodding* 766. This also is a highly variable species which, as currently accepted, ranges from Texas to Argentina and occurs also in Santo Domingo and in the Hawaiian Islands. So far as the writer can find it has been known hitherto in the United States only from western Texas. The present specimens, which are unusually large, were distributed under the name *Pellaea atropurpurea*.

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### A New *Polystichum* from British Columbia

L. S. HOPKINS.

In the latter part of last year Dr. J. M. Macoun sent to the writer for identification a fern which he had collected August 2d, on Vancouver Island, British Columbia. The fern seems distinct enough to warrant its description as a new species and it is therefore given the specific name *Andersoni* in honor of Mr. W. B. Anderson, who first directed Dr. Macoun's attention to it. Only three fruiting fronds were found, all growing from the same root.

#### ***Polystichum Andersoni* sp. nov.**

Stipe short, 2-4 cm. long; stipe and rachis densely clothed with pale lanceolate chaff; blade 8-12 cm. wide, 45-55 cm. long, lanceolate, pinnate, broadest one-third of the distance from the base, tapering to an acuminate point; pinnae pinnatifid, broadest at the base, tapering